SEQUENCE LISTING

<110> BRAUN, Curtis
PURAC, Admir
BORGFORD, Thor

<120> Improved Ricin-Like Toxins for Treatment of Cancer

<130> 10447-22

<140> US 10/089,058

<141> 2000-10-04

<150> US 60/197,409

<151> 2000-04-14

<150> US 60/157,807

<151> 1999-10-04

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Gln Arg Asn Phe Asn Ala Asp Val Cys Met Asp Pro Glu
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<223> primer 302-3'

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<213> Ricinus communis

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<223> primer 302-5'

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<223> pAP302(MMP-9) linker

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<223> pAP302

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<213> Ricinus communis

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Val Pro Asn Phe Asn Ala Asp Val Cys Met Asp Pro Glu
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<211> 22

<212> PRT

<213> Artificial Sequence

<220>

<223> PAP302(MMP-9) linker

<400> 14

Cys Ala Pro Pro Pro Ser Ser Gln Phe Ser Pro Gln Gly Ile Ala Gly
1 5 10 15

Gln Cys Met Asp Pro Glu
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<210> 15

<211> 24

<212> DNA

<213> Artificial Sequence

<220>

<223> primer 303-3'

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<210> 16

<211> 105

<212> DNA

<213> Ricinus communis

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gtggtaccaa attttaatgc tgatgtttgt atggatcctg agccc 105

<210> 17

<211> 36

<212> DNA

<213> Artificial Sequence

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<223> primer 303-5'

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<210> 18

<211> 45

<212> DNA

<213> Artificial Sequence

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<223> pAP303 (MMP-1) linker

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<211> 1831

<212> DNA

<213> Artificial Sequence

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<223> pAP303

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gtgttgccaa acagagttgg tttgcctata aaccaacggt ttattttagt tgaactctca 300

aatcatgcag agctttctgt tacattagcg ctggatgtca ccaatgcata tgtggtcggc 360

taccgtgctg gaaatagcgc atatttcttt catcctgaca atcaggaaga tgcagaagca 420

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<213> Ricinus communis

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Val Pro Asn Phe Asn Ala Asp Val Cys Met Asp Pro Glu
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<210> 21

<211> 21

<212> PRT

<213> Artificial Sequence

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<223> PAP303(MMP-9) linker

<400> 21

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1 5 10 15

Cys Met Asp Pro Glu
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<210> 22

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<212> DNA

<213> Artificial Sequence

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<211> 105

<212> DNA

<213> Ricinus communis

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gtggtaccaa attttaatgc tgatgtttgt atggatcctg agccc 105

<210> 24

<211> 36

<212> DNA

<213> Artificial Sequence

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<223> primer 304-5'

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<211> 24

<212> DNA

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<211> 29

<212> PRT

<213> Ricinus communis

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Val Pro Asn Phe Asn Ala Asp Val Cys Met Asp Pro Glu
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<211> 14

<212> PRT

<213> Artificial Sequence

<220>

<223> PAP304(MMP-9) linker

<400> 28

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<210> 29

<211> 24

<212> DNA

<213> Artificial Sequence

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<223> primer 305-3'

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<211> 105

<212> DNA

<213> Ricinus communis

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<223> primer 305-5'

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<211> 36

<212> DNA

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<223> pAP305 (MMP-9) linker

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<211> 1822

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<223> pAP305

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<212> PRT

<213> Ricinus communis

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1 5 10 15

Val Pro Asn Phe Asn Ala Asp Val Cys Met Asp Pro Glu
20 25

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<211> 18

<212> PRT

<213> Artificial Sequence

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<223> PAP305 (MMP-9) linker

<400> 35

Cys Ala Pro Pro Pro Ser Pro Gln Gly Ile Ala Gly Gln Cys Met Asp
1 5 10 15

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<210> 36

<211> 45

<212> DNA

<213> Artificial Sequence

<220>

<223> primer 308-3'

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<210> 37

<211> 120

<212> DNA

<213> Ricinus communis

<400> 37
ctcatggtgt atagatgcgc acctccacca tcgtcacagt tttctttgct tataaggcca 60

gtggtaccaa attttaatgc tgatgtttgt atggatcctg agcccatagt gcgtatcgta 120

<210> 38

<211> 30

<212> DNA

<213> Artificial Sequence

<220>

<223> primer 308-5'

<400> 38
gccaagagga cctggtggag gtgcgcatct 30

<210> 39

<211> 36

<212> DNA

<213> Artificial Sequence

<220>

<223> pAP308 (MMP-9) linker

<400> 39
gcacctccac caggtcctct tggcatgtgg ggacaa 36

<210> 40

<211> 1822

<212> DNA

<213> Artificial Sequence

<220>

<223> pAP308

<400> 40
gaattcatga aaccgggagg aaatactatt gtaatatgga tgtatgcagt ggcaacatgg 60

ctttgttttg gatccacctc agggtggtct ttcacattag aggataacaa catattcccc 120

aaacaatacc caattataaa ctttaccaca gcgggtgcca ctgtgcaaag ctacacaaac 180

tttatcagag ctgttcgcgg tcgtttaaca actggagctg atgtgagaca tgaaatacca 240

gtgttgccaa acagagttgg tttgcctata aaccaacggt ttattttagt tgaactctca 300

aatcatgcag agctttctgt tacattagcg ctggatgtca ccaatgcata tgtggtcggc 360

taccgtgctg gaaatagcgc atatttcttt catcctgaca atcaggaaga tgcagaagca 420

atcactcatc ttttcactga tgttcaaaat cgatatacat tcgcctttgg tggtaattat 480

gatagacttg aacaacttgc tggtaatctg agagaaaata tcgagttggg aaatggtcca 540

ctagaggagg ctatctcagc gctttattat tacagtactg gtggcactca gcttccaact 600

ctggctcgtt cctttataat ttgcatccaa atgatttcag aagcagcaag attccaatat 660

attgagggag aaatgcgcac gagaattagg tacaaccgga gatctgcacc agatcctagc 720

gtaattacac ttgagaatag ttgggggaga ctttccactg caattcaaga gtctaaccaa 780

ggagcctttg ctagtccaat tcaactgcaa agacgtaatg gttccaaatt cagtgtgtac 840

gatgtgagta tattaatccc tatcatagct ctcatggtgt atagatgcgc acctccacca 900

ggtcctcttg gcatgtgggg acaatgtggt ggcggagggc ccatagtgcg tatcgtaggt 960

cgaaatggtc tatgtgttga tgttagggat ggaagattcc acaacggaaa cgcaatacag 1020

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actattcgat ctaatggaaa gtgtttaact acttacgggt acagtccggg agtctatgtg 1140

atgatctatg attgcaatac tgctgcaact gatgccaccc gctggcaaat atgggataat 1200

ggaaccatca taaatcccag atctagtcta gttttagcag cgacatcagg gaacagtggt 1260

accacactta cagtgcaaac caacatttat gccgttagtc aaggttggct tcctactaat 1320

aatacacaac cttttgttac aaccattgtt gggctatatg gtctgtgctt gcaagcaaat 1380

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aatatacggg aaacagttgt taagatcctc tcttgtggcc ctgcatcctc tggccaacga 1560

tggatgttca agaatgatgg aaccatttta aatttgtata gtgggttggt gttagatgtg 1620

aggcgatcgg atccgagcct taaacaaatc attctttacc ctctccatgg tgacccaaac 1680

caaatatggt taccattatt ttgatagaca gattactctc ttgcagtgtg tgtgtcctgc 1740

catgaaaata gatggcttaa ataaaaagga cattgtaaat tttgtaactg aaaggacagc 1800

aagttatatc gaattcctgc ag 1822

<210> 41

<211> 29

<212> PRT

<213> Ricinus communis

<400> 41

Cys Ala Pro Pro Pro Ser Ser Gln Phe Ser Leu Leu Ile Arg Pro Val

1 5 10 15

Val Pro Asn Phe Asn Ala Asp Val Cys Met Asp Pro Glu
20 25

<210> 42

<211> 18

<212> PRT

<213> Artificial Sequence

<220>

<223> PAP308 (MMP-9) linker

<400> 42

Cys Ala Pro Pro Pro Gly Pro Leu Gly Met Trp Gly Gln Cys Gly Gly
1 5 10 15

Gly Gly

<210> 43

<211> 48

<212> DNA

<213> Artificial Sequence

<220>

<223> primer 309-3'

<400> 43
tttaatgctg atgtttgtgg tggcggaggg cccatagtgc gtatcgta 48

<210> 44

<211> 120

<212> DNA

<213> Ricinus communis

<400> 44
ctcatggtgt atagatgcgc acctccacca tcgtcacagt tttctttgct tataaggcca 60

gtggtaccaa attttaatgc tgatgtttgt atggatcctg agcccatagt gcgtatcgta 120

<210> 45

<211> 48

<212> DNA

<213> Artificial Sequence

<220>

<223> primer 309-5'

<400> 45
atttcgttgt ccccacatgc caagaggacc aaactgtgac gatggtgg 48

<210> 46

<211> 69

<212> DNA

<213> Artificial Sequence

<220>

<223> pAP309 (MMP-9) linker

<400> 46
gcacctccac catcgtcaca gtttggtcct cttggcatgt ggggacaacg aaattttaat 60

gctgatgtt 69

<210> 47

<211> 1855

<212> DNA

<213> Artificial Sequence

<220>

<223> pAP309

<400> 47
gaattcatga aaccgggagg aaatactatt gtaatatgga tgtatgcagt ggcaacatgg 60

ctttgttttg gatccacctc agggtggtct ttcacattag aggataacaa catattcccc 120

aaacaatacc caattataaa ctttaccaca gcgggtgcca ctgtgcaaag ctacacaaac 180

tttatcagag ctgttcgcgg tcgtttaaca actggagctg atgtgagaca tgaaatacca 240

gtgttgccaa acagagttgg tttgcctata aaccaacggt ttattttagt tgaactctca 300

aatcatgcag agctttctgt tacattagcg ctggatgtca ccaatgcata tgtggtcggc 360

taccgtgctg gaaatagcgc atatttcttt catcctgaca atcaggaaga tgcagaagca 420

atcactcatc ttttcactga tgttcaaaat cgatatacat tcgcctttgg tggtaattat 480

gatagacttg aacaacttgc tggtaatctg agagaaaata tcgagttggg aaatggtcca 540

ctagaggagg ctatctcagc gctttattat tacagtactg gtggcactca gcttccaact 600

ctggctcgtt cctttataat ttgcatccaa atgatttcag aagcagcaag attccaatat 660

attgagggag aaatgcgcac gagaattagg tacaaccgga gatctgcacc agatcctagc 720

gtaattacac ttgagaatag ttgggggaga ctttccactg caattcaaga gtctaaccaa 780

ggagcctttg ctagtccaat tcaactgcaa agacgtaatg gttccaaatt cagtgtgtac 840

gatgtgagta tattaatccc tatcatagct ctcatggtgt atagatgcgc acctccacca 900

tcgtcacagt ttggtcctct tggcatgtgg ggacaacgaa attttaatgc tgatgtttgt 960

ggtggcggag ggcccatagt gcgtatcgta ggtcgaaatg gtctatgtgt tgatgttagg 1020

gatggaagat tccacaacgg aaacgcaata cagttgtggc catgcaagtc taatacagat 1080

gcaaatcagc tctggacttt gaaaagagac aatactattc gatctaatgg aaagtgttta 1140

actacttacg ggtacagtcc gggagtctat gtgatgatct atgattgcaa tactgctgca 1200

actgatgcca cccgctggca aatatgggat aatggaacca tcataaatcc cagatctagt 1260

ctagttttag cagcgacatc agggaacagt ggtaccacac ttacagtgca aaccaacatt 1320

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gttgggctat atggtctgtg cttgcaagca aatagtggac aagtatggat agaggactgt 1440

agcagtgaaa aggctgaaca acagtgggct ctttatgcag atggttcaat acgtcctcag 1500

caaaaccgag ataattgcct tacaagtgat tctaatatac gggaaacagt tgttaagatc 1560

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ttaaatttgt atagtgggtt ggtgttagat gtgaggcgat cggatccgag ccttaaacaa 1680

atcattcttt accctctcca tggtgaccca aaccaaatat ggttaccatt attttgatag 1740

acagattact ctcttgcagt gtgtgtgtcc tgccatgaaa atagatggct taaataaaaa 1800

ggacattgta aattttgtaa ctgaaaggac agcaagttat atcgaattcc tgcag 1855

<210> 48

<211> 29

<212> PRT

<213> Ricinus communis

<400> 48

Cys Ala Pro Pro Pro Ser Ser Gln Phe Ser Leu Leu Ile Arg Pro Val
1 5 10 15

Val Pro Asn Phe Asn Ala Asp Val Cys Met Asp Pro Glu
20 25

<210> 49

<211> 29

<212> PRT

<213> Artificial Sequence

<220>

<223> PAP309 (MMP-9) linker

<400> 49

Cys Ala Pro Pro Pro Ser Ser Gln Phe Gly Pro Leu Gly Met Trp Gly
1 5 10 15

Gln Arg Asn Phe Asn Ala Asp Val Cys Gly Gly Gly Gly Gly
20 25

<210> 50

<211> 27

<212> DNA

<213> Artificial Sequence

<220>

<223> primer 313-3'

<400> 50
gtagtcggcg ggtgtatgga tcctgag 27

<210> 51

<211> 105

<212> DNA

<213> Ricinus communis

<400> 51
ctcatggtgt atagatgcgc acctccacca tcgtcacagt tttctttgct tataaggcca 60

gtggtaccaa attttaatgc tgatgtttgt atggatcctg agccc 105

<210> 52

<211> 24

<212> DNA

<213> Artificial Sequence

<220>

<223> primer 313-5'

<400> 52
tcgtcctggg catctataca ccat 24

<210> 53

<211> 21

<212> DNA

<213> Artificial Sequence

<220>

<223> pAP313 (UPA) linker

<400> 53
ccaggacgag tagtcggcgg g 21

<210> 54

<211> 1807

<212> DNA

<213> Artificial Sequence

<220>

<223> pAP 313

<400> 54

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aaacaatacc caattataaa ctttaccaca gcgggtgcca ctgtgcaaag ctacacaaac 180

tttatcagag ctgttcgcgg tcgtttaaca actggagctg atgtgagaca tgaaatacca 240

gtgttgccaa acagagttgg tttgcctata aaccaacggt ttattttagt tgaactctca 300

aatcatgcag agctttctgt tacattagcg ctggatgtca ccaatgcata tgtggtcggc 360

taccgtgctg gaaatagcgc atatttcttt catcctgaca atcaggaaga tgcagaagca 420

atcactcatc ttttcactga tgttcaaaat cgatatacat tcgcctttgg tggtaattat 480

gatagacttg aacaacttgc tggtaatctg agagaaaata tcgagttggg aaatggtcca 540

ctagaggagg ctatctcagc gctttattat tacagtactg gtggcactca gcttccaact 600

ctggctcgtt cctttataat ttgcatccaa atgatttcag aagcagcaag attccaatat 660

attgagggag aaatgcgcac gagaattagg tacaaccgga gatctgcacc agatcctagc 720

gtaattacac ttgagaatag ttgggggaga ctttccactg caattcaaga gtctaaccaa 780

ggagcctttg ctagtccaat tcaactgcaa agacgtaatg gttccaaatt cagtgtgtac 840

gatgtgagta tattaatccc tatcatagct ctcatggtgt atagatgccc aggacgagta 900

gtcggcgggt gtatggatcc tgagcccata gtgcgtatcg taggtcgaaa tggtctatgt 960

gttgatgtta gggatggaag attccacaac ggaaacgcaa tacagttgtg gccatgcaag 1020

tctaatacag atgcaaatca gctctggact ttgaaaagag acaatactat tcgatctaat 1080

ggaaagtgtt taactactta cgggtacagt ccgggagtct atgtgatgat ctatgattgc 1140

aatactgctg caactgatgc cacccgctgg caaatatggg ataatggaac catcataaat 1200

cccagatcta gtctagtttt agcagcgaca tcagggaaca gtggtaccac acttacagtg 1260

caaaccaaca tttatgccgt tagtcaaggt tggcttccta ctaataatac acaacctttt 1320

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gttgttaaga tcctctcttg tggccctgca tcctctggcc aacgatggat gttcaagaat 1560

gatggaacca ttttaaattt gtatagtggg ttggtgttag atgtgaggcg atcggatccg 1620

agccttaaac aaatcattct ttaccctctc catggtgacc caaaccaaat atggttacca 1680

ttattttgat agacagatta ctctcttgca gtgtgtgtgt cctgccatga aaatagatgg 1740

cttaaataaa aaggacattg taaattttgt aactgaaagg acagcaagtt atatcgaatt 1800

cctgcag 1807

<210> 55

<211> 29

<212> PRT

<213> Ricinus communis

<400> 55

Cys Ala Pro Pro Pro Ser Ser Gln Phe Ser Leu Leu Ile Arg Pro Val
1 5 10 15

Val Pro Asn Phe Asn Ala Asp Val Cys Met Asp Pro Glu
20 25

<210> 56

<211> 13

<212> PRT

<213> Artificial Sequence

<220>

<223> PAP313 (UPA) linker

<400> 56

Cys Pro Gly Arg Val Val Gly Gly Cys Met Asp Pro Glu
1 5 10

<210> 57

<211> 39

<212> DNA

<213> Artificial Sequence

<220>

<223> primer 314-3'

<400> 57
gtagtcggcg ggggaggcgg gggttgtatg gatcctgag 39

<210> 58

<211> 105

<212> DNA

<213> Ricinus communis

<400> 58
ctcatggtgt atagatgcgc acctccacca tcgtcacagt tttctttgct tataaggcca 60

gtggtaccaa attttaatgc tgatgtttgt atggatcctg agccc 105

<210> 59

<211> 36

<212> DNA

<213> Artificial Sequence

<220>

<223> primer 314-5'

<400> 59
tcgtcctgga cccccgcctc cgcatctata caccat 36

<210> 60

<211> 45

<212> DNA

<213> Artificial Sequence

<220>

<223> pAP314 (UPA) linker

<400> 60
ggaggcgggg gtccaggacg agtagtcggc gggggaggcg ggggt 45

<210> 61

<211> 1831

<212> DNA

<213> Artificial Sequence

<220>

<223> pAP314

<400> 61

gaattcatga aaccgggagg aaatactatt gtaatatgga tgtatgcagt ggcaacatgg 60

ctttgttttg gatccacctc agggtggtct ttcacattag aggataacaa catattcccc 120

aaacaatacc caattataaa ctttaccaca gcgggtgcca ctgtgcaaag ctacacaaac 180

tttatcagag ctgttcgcgg tcgtttaaca actggagctg atgtgagaca tgaaatacca 240

gtgttgccaa acagagttgg tttgcctata aaccaacggt ttattttagt tgaactctca 300

aatcatgcag agctttctgt tacattagcg ctggatgtca ccaatgcata tgtggtcggc 360

taccgtgctg gaaatagcgc atatttcttt catcctgaca atcaggaaga tgcagaagca 420

atcactcatc ttttcactga tgttcaaaat cgatatacat tcgcctttgg tggtaattat 480

gatagacttg aacaacttgc tggtaatctg agagaaaata tcgagttggg aaatggtcca 540

ctagaggagg ctatctcagc gctttattat tacagtactg gtggcactca gcttccaact 600

ctggctcgtt cctttataat ttgcatccaa atgatttcag aagcagcaag attccaatat 660

attgagggag aaatgcgcac gagaattagg tacaaccgga gatctgcacc agatcctagc 720

gtaattacac ttgagaatag ttgggggaga ctttccactg caattcaaga gtctaaccaa 780

ggagcctttg ctagtccaat tcaactgcaa agacgtaatg gttccaaatt cagtgtgtac 840

gatgtgagta tattaatccc tatcatagct ctcatggtgt atagatgcgg aggcgggggt 900

ccaggacgag tagtcggcgg gggaggcggg ggttgtatgg atcctgagcc catagtgcgt 960

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agagacaata ctattcgatc taatggaaag tgtttaacta cttacgggta cagtccggga 1140

gtctatgtga tgatctatga ttgcaatact gctgcaactg atgccacccg ctggcaaata 1200

tgggataatg gaaccatcat aaatcccaga tctagtctag ttttagcagc gacatcaggg 1260

aacagtggta ccacacttac agtgcaaacc aacatttatg ccgttagtca aggttggctt 1320

cctactaata atacacaacc ttttgttaca accattgttg ggctatatgg tctgtgcttg 1380

caagcaaata gtggacaagt atggatagag gactgtagca gtgaaaaggc tgaacaacag 1440

tgggctcttt atgcagatgg ttcaatacgt cctcagcaaa accgagataa ttgccttaca 1500

agtgattcta atatacggga aacagttgtt aagatcctct cttgtggccc tgcatcctct 1560

ggccaacgat ggatgttcaa gaatgatgga accattttaa atttgtatag tgggttggtg 1620

ttagatgtga ggcgatcgga tccgagcctt aaacaaatca ttctttaccc tctccatggt 1680

gacccaaacc aaatatggtt accattattt tgatagacag attactctct tgcagtgtgt 1740

gtgtcctgcc atgaaaatag atggcttaaa taaaaaggac attgtaaatt ttgtaactga 1800

aaggacagca agttatatcg aattcctgca g 1831

<210> 62

<211> 28

<212> PRT

<213> Ricinus communis

<400> 62

Ala Pro Pro Pro Ser Ser Gln Phe Ser Leu Leu Ile Arg Pro Val Val
1 5 10 15

Pro Asn Phe Asn Ala Asp Val Cys Met Asp Pro Glu
20 25

<210> 63

<211> 21

<212> PRT

<213> Artificial Sequence

<220>

<223> PAP314 (UPA) linker

<400> 63

Cys Gly Gly Gly Gly Pro Gly Arg Val Val Gly Gly Gly Gly Gly Gly
1 5 10 15

Cys Met Asp Pro Glu
20

<210> 64

<211> 36

<212> DNA

<213> Artificial Sequence

<220>

<223> primer 315-3'

<400> 64
ccaggacgag tagtcggcgg gtgtatggat cctgag 36

<210> 65

<211> 105

<212> DNA

<213> Ricinus communis

<400> 65
ctcatggtgt atagatgcgc acctccacca tcgtcacagt tttctttgct tataaggcca 60

gtggtaccaa attttaatgc tgatgtttgt atggatcctg agccc 105

<210> 66

<211> 36

<212> DNA

<213> Artificial Sequence

<220>

<223> primer 315-5'

<400> 66
cccgccgact actcgtcctg ggcatctata caccat 36

<210> 67

<211> 42

<212> DNA

<213> Artificial Sequence

<220>

<223> pAP315 (UPA) linker

<400> 67
ccaggacgag tagtcggcgg gccaggacga gtagtcggcg gg 42

<210> 68

<211> 1828

<212> DNA

<213> Artificial Sequence

<220>

<223> pAP315

<400> 68
gaattcatga aaccgggagg aaatactatt gtaatatgga tgtatgcagt ggcaacatgg 60

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aaacaatacc caattataaa ctttaccaca gcgggtgcca ctgtgcaaag ctacacaaac 180

tttatcagag ctgttcgcgg tcgtttaaca actggagctg atgtgagaca tgaaatacca 240

gtgttgccaa acagagttgg tttgcctata aaccaacggt ttattttagt tgaactctca 300

aatcatgcag agctttctgt tacattagcg ctggatgtca ccaatgcata tgtggtcggc 360

taccgtgctg gaaatagcgc atatttcttt catcctgaca atcaggaaga tgcagaagca 420

atcactcatc ttttcactga tgttcaaaat cgatatacat tcgcctttgg tggtaattat 480

gatagacttg aacaacttgc tggtaatctg agagaaaata tcgagttggg aaatggtcca 540

ctagaggagg ctatctcagc gctttattat tacagtactg gtggcactca gcttccaact 600

ctggctcgtt cctttataat ttgcatccaa atgatttcag aagcagcaag attccaatat 660

attgagggag aaatgcgcac gagaattagg tacaaccgga gatctgcacc agatcctagc 720

gtaattacac ttgagaatag ttgggggaga ctttccactg caattcaaga gtctaaccaa 780

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gtcggcgggc caggacgagt agtcggcggg tgtatggatc ctgagcccat agtgcgtatc 960

gtaggtcgaa atggtctatg tgttgatgtt agggatggaa gattccacaa cggaaacgca 1020

atacagttgt ggccatgcaa gtctaataca gatgcaaatc agctctggac tttgaaaaga 1080

gacaatacta ttcgatctaa tggaaagtgt ttaactactt acgggtacag tccgggagtc 1140

tatgtgatga tctatgattg caatactgct gcaactgatg ccacccgctg gcaaatatgg 1200

gataatggaa ccatcataaa tcccagatct agtctagttt tagcagcgac atcagggaac 1260

agtggtacca cacttacagt gcaaaccaac atttatgccg ttagtcaagg ttggcttcct 1320

actaataata cacaaccttt tgttacaacc attgttgggc tatatggtct gtgcttgcaa 1380

gcaaatagtg gacaagtatg gatagaggac tgtagcagtg aaaaggctga acaacagtgg 1440

gctctttatg cagatggttc aatacgtcct cagcaaaacc gagataattg ccttacaagt 1500

gattctaata tacgggaaac agttgttaag atcctctctt gtggccctgc atcctctggc 1560

caacgatgga tgttcaagaa tgatggaacc attttaaatt tgtatagtgg gttggtgtta 1620

gatgtgaggc gatcggatcc gagccttaaa caaatcattc tttaccctct ccatggtgac 1680

ccaaaccaaa tatggttacc attattttga tagacagatt actctcttgc agtgtgtgtg 1740

tcctgccatg aaaatagatg gcttaaataa aaaggacatt gtaaattttg taactgaaag 1800

gacagcaagt tatatcgaat tcctgcag 1828

<210> 69

<211> 29

<212> PRT

<213> Ricinus communis

<400> 69

Cys Ala Pro Pro Pro Ser Ser Gln Phe Ser Leu Leu Ile Arg Pro Val
1 5 10 15

Val Pro Asn Phe Asn Ala Asp Val Cys Met Asp Pro Glu
20 25

<210> 70

<211> 20

<212> PRT

<213> Artificial Sequence

<220>

<223> PAP315 (UPA) linker

<400> 70

Cys Pro Gly Arg Val Val Gly Gly Pro Gly Arg Val Val Gly Gly Cys
1 5 10 15

Met Asp Pro Glu
20

<210> 71

<211> 51

<212> DNA

<213> Artificial Sequence

<220>

<223> primer 316-3'

<400> 71
attgcagggc agggaggggg tagtagcggc gggggatgta tggatcctga g 51

<210> 72

<211> 105

<212> DNA

<213> Ricinus communis

<400> 72
ctcatggtgt atagatgcgc acctccacca tcgtcacagt ttctttgct tataaggcca 60

gtggtaccaa attttaatgc tgatgtttgt atggatcctg agccc 105

<210> 73

<211> 48

<212> DNA

<213> Artificial Sequence

<220>

<223> primer 316-5'

<400> 73
tccttgcgga cccccgcctg gagtcccgcc tccgcatcta tacaccat 48

<210> 74

<211> 69

<212> DNA

<213> Artificial Sequence

<220>

<223> pAP316 (UPA) linker

<400> 74
ggaggcgggg actccagcgg gggtccgcaa ggaattgcag ggcagggagg gggtagtagc 60

ggcgggggga 69

<210> 75

<211> 1855

<212> DNA

<213> Artificial Sequence

<220>

<223> pAP316

<400> 75
gaattcatga aaccgggagg aaatactatt gtaatatgga tgtatgcagt ggcaacatgg 60

ctttgttttg gatccacctc agggtggtct ttcacattag aggataacaa catattcccc 120

aaacaatacc caattataaa ctttaccaca gcgggtgcca ctgtgcaaag ctacacaaac 180

tttatcagag ctgttcgcgg tcgtttaaca actggagctg atgtgagaca tgaaatacca 240

gtgttgccaa acagagttgg tttgcctata aaccaacggt ttattttagt tgaactctca 300

aatcatgcag agctttctgt tacattagcg ctggatgtca ccaatgcata tgtggtcggc 360

taccgtgctg gaaatagcgc atatttcttt catcctgaca atcaggaaga tgcagaagca 420

atcactcatc ttttcactga tgttcaaaat cgatatacat tcgcctttgg tggtaattat 480

gatagacttg aacaacttgc tggtaatctg agagaaaata tcgagttggg aaatggtcca 540

ctagaggagg ctatctcagc gctttattat tacagtactg gtggcactca gcttccaact 600

ctggctcgtt cctttataat ttgcatccaa atgatttcag aagcagcaag attccaatat 660

attgagggag aaatgcgcac gagaattagg tacaaccgga gatctgcacc agatcctagc 720

gtaattacac ttgagaatag ttgggggaga ctttccactg caattcaaga gtctaaccaa 780

ggagcctttg ctagtccaat tcaactgcaa agacgtaatg gttccaaatt cagtgtgtac 840

gatgtgagta tattaatccc tatcatagct ctcatggtgt atagatgcgg aggcgggggt 900

ggaggcgggg gtccgcaagg aattgcaggg cagggagggg gtagtagcgg cgggggatgt 960

atggatcctg agcccatagt gcgtatcgta ggtcgaaatg gtctatgtgt tgatgttagg 1020

gatggaagat tccacaacgg aaacgcaata cagttgtggc catgcaagtc taatacagat 1080

gcaaatcagc tctggacttt gaaaagagac aatactattc gatctaatgg aaagtgttta 1140

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actgatgcca cccgctggca aatatgggat aatggaacca tcataaatcc cagatctagt 1260

ctagttttag cagcgacatc agggaacagt ggtaccacac ttacagtgca aaccaacatt 1320

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gttgggctat atggtctgtg cttgcaagca aatagtggac aagtatggat agaggactgt 1440

agcagtgaaa aggctgaaca acagtgggct ctttatgcag atggttcaat acgtcctcag 1500

caaaaccgag ataattgcct tacaagtgat tctaatatac gggaaacagt tgttaagatc 1560

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ttaaatttgt atagtgggtt ggtgttagat gtgaggcgat cggatccgag ccttaaacaa 1680

atcattcttt accctctcca tggtgaccca aaccaaatat ggttaccatt attttgatag 1740

acagattact ctcttgcagt gtgtgtgtcc tgccatgaaa atagatggct taaataaaaa 1800

ggacattgta aattttgtaa ctgaaaggac agcaagttat atcgaattcc tgcag 1855

<210> 76

<211> 29

<212> PRT

<213> Ricinus communis

<400> 76

Cys Ala Pro Pro Pro Ser Ser Gln Phe Ser Leu Leu Ile Arg Pro Val
1 5 10 15

Val Pro Asn Phe Asn Ala Asp Val Cys Met Asp Pro Glu
20 25

<210> 77

<211> 29

<212> PRT

<213> Artificial Sequence

<220>

<223> PAP316 (UPA) linker

<400> 77

Cys Gly Gly Gly Ser Ser Gly Gly Gly Pro Gln Gly Ile Ala Gly Gln
1 5 10 15

Gly Gly Gly Ser Ser Gly Gly Gly Cys Met Asp Pro Glu
20 25

<210> 78

<211> 39

<212> DNA

<213> Artificial Sequence

<220>

<223> primer 318-3'

<400> 78
attgcagggc aggatgaaga ggatgctgat gtttgtatg 39

<210> 79

<211> 105

<212> DNA

<213> Ricinus communis

<400> 79
ctcatggtgt atagatgcgc acctccacca tcgtcacagt ttctttgct tataaggcca 60

gtggtaccaa attttaatgc tgatgtttgt atggatcctg agccc 105

<210> 80

<211> 33

<212> DNA

<213> Artificial Sequence

<220>

<223> primer 318-5'

<400> 80
tccttgcgga gaacctcctg acgatggtgg agg 33

<210> 81

<211> 69

<212> DNA

<213> Artificial Sequence

<220>

<223> pAP318 (MMP-9) linker

<400> 81
gcacctccac catcgtcagg aggttctccg caaggaattg cagggcagga tgaagaggat 60

gctgatgtt 69

<210> 82

<211> 1855

<212> DNA

<213> Artificial Sequence

<220>

<223> pAP318

<400> 82
gaattcatga aaccgggagg aaatactatt gtaatatgga tgtatgcagt ggcaacatgg 60

ctttgttttg gatccacctc agggtggtct ttcacattag aggataacaa catattcccc 120

aaacaatacc caattataaa ctttaccaca gcgggtgcca ctgtgcaaag ctacacaaac 180

tttatcagag ctgttcgcgg tcgtttaaca actggagctg atgtgagaca tgaaatacca 240

gtgttgccaa acagagttgg tttgcctata aaccaacggt ttattttagt tgaactctca 300

aatcatgcag agctttctgt tacattagcg ctggatgtca ccaatgcata tgtggtcggc 360

taccgtgctg gaaatagcgc atatttcttt catcctgaca atcaggaaga tgcagaagca 420

atcactcatc ttttcactga tgttcaaaat cgatatacat tcgcctttgg tggtaattat 480

gatagacttg aacaacttgc tggtaatctg agagaaaata tcgagttggg aaatggtcca 540

ctagaggagg ctatctcagc gctttattat tacagtactg gtggcactca gcttccaact 600

ctggctcgtt cctttataat ttgcatccaa atgatttcag aagcagcaag attccaatat 660

attgagggag aaatgcgcac gagaattagg tacaaccgga gatctgcacc agatcctagc 720

gtaattacac ttgagaatag ttgggggaga ctttccactg caattcaaga gtctaaccaa 780

ggagcctttg ctagtccaat tcaactgcaa agacgtaatg gttccaaatt cagtgtgtac 840

gatgtgagta tattaatccc tatcatagct ctcatggtgt atagatgcgc acctccacca 900

tcgtcggagg ttctccgcaa ggaattgcag ggcaggatga agaggaatgc tgatgtttgt 960

atggatcctg agcccatagt gcgtatcgta ggtcgaaatg gtctatgtgt tgatgttagg 1020

gatggaagat tccacaacgg aaacgcaata cagttgtggc catgcaagtc taatacagat 1080

gcaaatcagc tctggacttt gaaaagagac aatactattc gatctaatgg aaagtgttta 1140

actacttacg ggtacagtcc gggagtctat gtgatgatct atgattgcaa tactgctgca 1200

actgatgcca cccgctggca aatatgggat aatggaacca tcataaatcc cagatctagt 1260

ctagttttag cagcgacatc agggaacagt ggtaccacac ttacagtgca aaccaacatt 1320

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gttgggctat atggtctgtg cttgcaagca aatagtggac aagtatggat agaggactgt 1440

agcagtgaaa aggctgaaca acagtgggct ctttatgcag atggttcaat acgtcctcag 1500

caaaaccgag ataattgcct tacaagtgat tctaatatac gggaaacagt tgttaagatc 1560

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ttaaatttgt atagtgggtt ggtgttagat gtgaggcgat cggatccgag ccttaaacaa 1680

atcattcttt accctctcca tggtgaccca aaccaaatat ggttaccatt attttgatag 1740

acagattact ctcttgcagt gtgtgtgtcc tgccatgaaa atagatggct taaataaaaa 1800

ggacattgta aattttgtaa ctgaaaggac agcaagttat atcgaattcc tgcag 1855

<210> 83

<211> 29

<212> PRT

<213> Ricinus communis

<400> 83

Cys Ala Pro Pro Pro Ser Ser Gln Phe Ser Leu Leu Ile Arg Pro Val
1 5 10 15

Val Pro Asn Phe Asn Ala Asp Val Cys Met Asp Pro Glu
20 25

<210> 84

<211> 29

<212> PRT

<213> Artificial Sequence

<220>

<223> PAP318 (MMP-9) linker

<400> 84

Cys Ala Pro Pro Pro Ser Ser Gly Gly Ser Pro Gln Gly Ile Ala Gly
1 5 10 15

Gln Asp Glu Glu Asp Ala Asp Val Cys Met Asp Pro Glu
20 25

<210> 85

<211> 36

<212> DNA

<213> Artificial Sequence

<220>

<223> primer 320-3'

<400> 85
gtagtcggcg gggggggagg ctgtatggat cctgag 36

<210> 86

<211> 105

<212> DNA

<213> Ricinus communis

<400> 86
ctcatggtgt atagatgcgc acctccacca tcgtcacagt ttctttgct tataaggcca 60

gtggtaccaa attttaatgc tgatgtttgt atggatcctg agccc 105

<210> 87

<211> 33

<212> DNA

<213> Artificial Sequence

<220>

<223> primer 320-5'

<400> 87
tcgtcctggt ccgcctccgc atctatacac cat 33

<210> 88

<211> 39

<212> DNA

<213> Artificial Sequence

<220>

<223> pAP320 (UPA) linker

<400> 88
ggaggcggac caggacgagt agtcggcggg gggggaggc 39

<210> 89

<211> 1825

<212> DNA

<213> Artificial Sequence

<220>

<223> pAP320

<400> 89
gaattcatga aaccgggagg aaatactatt gtaatatgga tgtatgcagt ggcaacatgg 60

ctttgttttg gatccacctc agggtggtct ttcacattag aggataacaa catattcccc 120

aaacaatacc caattataaa ctttaccaca gcgggtgcca ctgtgcaaag ctacacaaac 180

tttatcagag ctgttcgcgg tcgtttaaca actggagctg atgtgagaca tgaaatacca 240

gtgttgccaa acagagttgg tttgcctata aaccaacggt ttattttagt tgaactctca 300

aatcatgcag agctttctgt tacattagcg ctggatgtca ccaatgcata tgtggtcggc 360

taccgtgctg gaaatagcgc atatttcttt catcctgaca atcaggaaga tgcagaagca 420

atcactcatc ttttcactga tgttcaaaat cgatatacat tcgcctttgg tggtaattat 480

gatagacttg aacaacttgc tggtaatctg agagaaaata tcgagttggg aaatggtcca 540

ctagaggagg ctatctcagc gctttattat tacagtactg gtggcactca gcttccaact 600

ctggctcgtt cctttataat ttgcatccaa atgatttcag aagcagcaag attccaatat 660

attgagggag aaatgcgcac gagaattagg tacaaccgga gatctgcacc agatcctagc 720

gtaattacac ttgagaatag ttgggggaga ctttccactg caattcaaga gtctaaccaa 780

ggagcctttg ctagtccaat tcaactgcaa agacgtaatg gttccaaatt cagtgtgtac 840

gatgtgagta tattaatccc tatcatagct ctcatggtgt atagatgcgg aggcggacca 900

ggacgagtag tcggcggggg gggaggctgt atggatcctg agcccatagt gcgtatcgta 960

ggtcgaaatg gtctatgtgt tgatgttagg gatggaagat tccacaacgg aaacgcaata 1020

cagttgtggc catgcaagtc taatacagat gcaaatcagc tctggacttt gaaaagagac 1080

aatactattc gatctaatgg aaagtgttta actacttacg ggtacagtcc gggagtctat 1140

gtgatgatct atgattgcaa tactgctgca actgatgcca cccgctggca aatatgggat 1200

aatggaacca tcataaatcc cagatctagt ctagttttag cagcgacatc agggaacagt 1260

ggtaccacac ttacagtgca aaccaacatt tatgccgtta gtcaaggttg gcttcctact 1320

aataatacac aacctttttgt tacaaccatt gttgggctat atggtctgtg cttgcaagca 1380

aatagtggac aagtatggat agaggactgt agcagtgaaa aggctgaaca acagtgggct 1440

ctttatgcag atggttcaat acgtcctcag caaaaccgag ataattgcct tacaagtgat 1500

tctaatatac gggaaacagt tgttaagatc ctctcttgtg gccctgcatc ctctggccaa 1560

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aaccaaatat ggttaccatt attttgatag acagattact ctcttgcagt gtgtgtgtcc 1740

tgccatgaaa atagatggct taaataaaaa ggacattgta aattttgtaa ctgaaaggac 1800

agcaagttat atcgaattcc tgcag 1825

<210> 90

<211> 29

<212> PRT

<213> Ricinus communis

<400> 90

Cys Ala Pro Pro Pro Ser Ser Gln Phe Ser Leu Leu Ile Arg Pro Val
1 5 10 15

Val Pro Asn Phe Asn Ala Asp Val Cys Met Asp Pro Glu
20 25

<210> 91

<211> 19

<212> PRT

<213> Artificial Sequence

<220>

<223> PAP320 (UPA) linker

<400> 91

Cys Gly Gly Gly Pro Gly Arg Val Val Gly Gly Gly Gly Gly Cys Met
1 5 10 15

Asp Pro Glu

<210> 92

<211> 33

<212> DNA

<213> Artificial Sequence

<220>

<223> primer 321-3'

<400> 92
gtagtcggcg ggggaggctg tatggatcct gag 33

<210> 93

<211> 105

<212> DNA

<213> Ricinus communis

<400> 93
ctcatggtgt atagatgcgc acctccacca tcgtcacagt tttctttgct tataaggcca 60

gtggtaccaa attttaatgc tgatgtttgt atggatcctg agccc 105

<210> 94

<211> 30

<212> DNA

<213> Artificial Sequence

<220>

<223> primer 321-5'

<400> 94
tcgtcctggg cctccgcatc tatacaccat 30

<210> 95

<211> 33

<212> DNA

<213> Artificial Sequence

<220>

<223> pAP321 (UPA) linker

<400> 95
ggaggcccag gacgagtagt cggcggggga ggc 33

<210> 96

<211> 1819

<212> DNA

<213> Artificial Sequence

<220>

<223> pAP321

<400> 96
gaattcatga aaccgggagg aaatactatt gtaatatgga tgtatgcagt ggcaacatgg 60

ctttgttttg gatccacctc agggtggtct ttcacattag aggataacaa catattcccc 120

aaacaatacc caattataaa ctttaccaca gcgggtgcca ctgtgcaaag ctacacaaac 180

tttatcagag ctgttcgcgg tcgtttaaca actggagctg atgtgagaca tgaaatacca 240

gtgttgccaa acagagttgg tttgcctata aaccaacggt ttattttagt tgaactctca 300

aatcatgcag agctttctgt tacattagcg ctggatgtca ccaatgcata tgtggtcggc 360

taccgtgctg gaaatagcgc atatttcttt catcctgaca atcaggaaga tgcagaagca 420

atcactcatc ttttcactga tgttcaaaat cgatatacat tcgcctttgg tggtaattat 480

gatagacttg aacaacttgc tggtaatctg agagaaaata tcgagttggg aaatggtcca 540

ctagaggagg ctatctcagc gctttattat tacagtactg gtggcactca gcttccaact 600

ctggctcgtt cctttataat ttgcatccaa atgatttcag aagcagcaag attccaatat 660

attgagggag aaatgcgcac gagaattagg tacaaccgga gatctgcacc agatcctagc 720

gtaattacac ttgagaatag ttgggggaga ctttccactg caattcaaga gtctaaccaa 780

ggagcctttg ctagtccaat tcaactgcaa agacgtaatg gttccaaatt cagtgtgtac 840

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cgagtagtcg gcgggggagg ctgtatggat cctgagccca tagtgcgtat cgtaggtcga 960

aatggtctat gtgttgatgt tagggatgga agattccaca acggaaacgc aatacagttg 1020

tggccatgca agtctaatac agatgcaaat cagctctgga ctttgaaaag agacaatact 1080

attcgatcta atggaaagtg tttaactact tacgggtaca gtccgggagt ctatgtgatg 1140

atctatgatt gcaatactgc tgcaactgat gccacccgct ggcaaatatg ggataatgga 1200

accatcataa atcccagatc tagtctagtt ttagcagcga catcagggaa cagtggtacc 1260

acacttacag tgcaaaccaa catttatgcc gttagtcaag gttggcttcc tactaataat 1320

acacaacctt ttgttacaac cattgttggg ctatatggtc tgtgcttgca agcaaatagt 1380

ggacaagtat ggatagagga ctgtagcagt gaaaaggctg aacaacagtg ggctctttat 1440

gcagatggtt caatacgtcc tcagcaaaac cgagataatt gccttacaag tgattctaat 1500

atacgggaaa cagttgttaa gatcctctct tgtggccctg catcctctgg ccaacgatgg 1560

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atatggttac cattattttg atagacagat tactctcttg cagtgtgtgt gtcctgccat 1740

gaaaatagat ggcttaaata aaaaggacat tgtaaatttt gtaactgaaa ggacagcaag 1800

ttatatcgaa ttcctgcag 1819

<210> 97

<211> 29

<212> PRT

<213> Ricinus communis

<400> 97

Cys Ala Pro Pro Pro Ser Ser Gln Phe Ser Leu Leu Ile Arg Pro Val
1 5 10 15

Val Pro Asn Phe Asn Ala Asp Val Cys Met Asp Pro Glu
20 25

<210> 98

<211> 17

<212> PRT

<213> Artificial Sequence

<220>

<223> PAP321 (UPA) linker

<400> 98

Cys Gly Gly Pro Gly Arg Val Val Gly Gly Gly Gly Cys Met Asp Pro
1 5 10 15

Glu

<210> 99

<211> 30

<212> DNA

<213> Artificial Sequence

<220>

<223> primer 322-3'

<400> 99
gtagtcggcg ggggctgtat ggatcctgag 30

<210> 100

<211> 105

<212> DNA

<213> Ricinus communis

<400> 100
ctcatggtgt atagatgcgc acctccacca tcgtcacagt tttctttgct tataaggcca 60

gtggtaccaa attttaatgc tgatgtttgt atggatcctg agccc 105

<210> 101

<211> 27

<212> DNA

<213> Artificial Sequence

<220>

<223> primer 322-5'

<400> 101
tcgtcctggt ccgcatctat acaccat 27

<210> 102

<211> 27

<212> DNA

<213> Artificial Sequence

<220>

<223> pAP322 (UPA) linker

<400> 102
ggaccaggac gagtagtcgg cgggggc 27

<210> 103

<211> 1813

<212> DNA

<213> Artificial Sequence

<220>

<223> pAP322

<400> 103
gaattcatga aaccgggagg aaatactatt gtaatatgga tgtatgcagt ggcaacatgg 60

ctttgttttg gatccacctc agggtggtct ttcacattag aggataacaa catattcccc 120

aaacaatacc caattataaa ctttaccaca gcgggtgcca ctgtgcaaag ctacacaaac 180

tttatcagag ctgttcgcgg tcgtttaaca actggagctg atgtgagaca tgaaatacca 240

gtgttgccaa acagagttgg tttgcctata aaccaacggt ttattttagt tgaactctca 300

aatcatgcag agctttctgt tacattagcg ctggatgtca ccaatgcata tgtggtcggc 360

taccgtgctg gaaatagcgc atatttcttt catcctgaca atcaggaaga tgcagaagca 420

atcactcatc ttttcactga tgttcaaaat cgatatacat tcgcctttgg tggtaattat 480

gatagacttg aacaacttgc tggtaatctg agagaaaata tcgagttggg aaatggtcca 540

ctagaggagg ctatctcagc gctttattat tacagtactg gtggcactca gcttccaact 600

ctggctcgtt cctttataat ttgcatccaa atgatttcag aagcagcaag attccaatat 660

attgagggag aaatgcgcac gagaattagg tacaaccgga gatctgcacc agatcctagc 720

gtaattacac ttgagaatag ttgggggaga ctttccactg caattcaaga gtctaaccaa 780

ggagcctttg ctagtccaat tcaactgcaa agacgtaatg gttccaaatt cagtgtgtac 840

gatgtgagta tattaatccc tatcatagct ctcatggtgt atagatgcgg accaggacga 900

gtagtcggcg ggggctgtat ggatcctgag cccatagtgc gtatcgtagg tcgaaatggt 960

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ccttttgtta caaccattgt tgggctatat ggtctgtgct tgcaagcaaa tagtggacaa 1380

gtatggatag aggactgtag cagtgaaaag gctgaacaac agtgggctct ttatgcagat 1440

ggttcaatac gtcctcagca aaaccgagat aattgcctta caagtgattc taatatacgg 1500

gaaacagttg ttaagatcct ctcttgtggc cctgcatcct ctggccaacg atggatgttc 1560

aagaatgatg gaaccatttt aaatttgtat agtgggttgg tgttagatgt gaggcgatcg 1620

gatccgagcc ttaaacaaat cattctttac cctctccatg gtgacccaaa ccaaatatgg 1680

ttaccattat tttgatagac agattactct cttgcagtgt gtgtgtcctg ccatgaaaat 1740

agatggctta aataaaaagg acattgtaaa ttttgtaact gaaaggacag caagttatat 1800

cgaattcctg cag 1813

<210> 104

<211> 29

<212> PRT

<213> Ricinus communis

<400> 104

Cys Ala Pro Pro Pro Ser Ser Gln Phe Ser Leu Leu Ile Arg Pro Val
1 5 10 15

Val Pro Asn Phe Asn Ala Asp Val Cys Met Asp Pro Glu
20 25

<210> 105

<211> 15

<212> PRT

<213> Artificial Sequence

<220>

<223> PAP322 (UPA) linker

<400> 105

Cys Gly Pro Gly Arg Val Val Gly Gly Gly Cys Met Asp Pro Glu
1 5 10 15

<210> 106

<211> 48

<212> DNA

<213> Artificial Sequence

<220>

<223> primer 323-3'

<400> 106
attgcagggc agggggggtag tagcggcggg ggatgtatgg atcctgag 48

<210> 107

<211> 105

<212> DNA

<213> Ricinus communis

<400> 107
ctcatggtgt atagatgcgc acctccacca tcgtcacagt tttctttgct tataaggcca 60

gtggtaccaa attttaatgc tgatgtttgt atggatcctg agccc 105

<210> 108

<211> 45

<212> DNA

<213> Artificial Sequence

<220>

<223> primer 323-5'

<400> 108
tccttgcgga ccccctggag tcccgcctcc gcatctatac accat 45

<210> 109

<211> 63

<212> DNA

<213> Artificial Sequence

<220>

<223> pAP323 (MMP-9) linker

<400> 109
ggaggcggga ctccaggggg tccgcaagga attgcagggc agggggggtag tagcggcggg 60

gga 63

<210> 110

<211> 1849

<212> DNA

<213> Artificial Sequence

<220>

<223> pAP323

<400> 110

gaattcatga aaccgggagg aaatactatt gtaatatgga tgtatgcagt ggcaacatgg 60

ctttgttttg gatccacctc agggtggtct ttcacattag aggataacaa catattcccc 120

aaacaatacc caattataaa ctttaccaca gcgggtgcca ctgtgcaaag ctacacaaac 180

tttatcagag ctgttcgcgg tcgtttaaca actggagctg atgtgagaca tgaaatacca 240

gtgttgccaa acagagttgg tttgcctata aaccaacggt ttattttagt tgaactctca 300

aatcatgcag agctttctgt tacattagcg ctggatgtca ccaatgcata tgtggtcggc 360

taccgtgctg gaaatagcgc atatttcttt catcctgaca atcaggaaga tgcagaagca 420

atcactcatc ttttcactga tgttcaaaat cgatatacat tcgcctttgg tggtaattat 480

gatagacttg aacaacttgc tggtaatctg agagaaaata tcgagttggg aaatggtcca 540

ctagaggagg ctatctcagc gctttattat tacagtactg gtggcactca gcttccaact 600

ctggctcgtt cctttataat ttgcatccaa atgatttcag aagcagcaag attccaatat 660

attgagggag aaatgcgcac gagaattagg tacaaccgga gatctgcacc agatcctagc 720

gtaattacac ttgagaatag ttgggggaga ctttccactg caattcaaga gtctaaccaa 780

ggagcctttg ctagtccaat tcaactgcaa agacgtaatg gttccaaatt cagtgtgtac 840

gatgtgagta tattaatccc tatcatagct ctcatggtgt atagatgcgg aggcgggact 900

ccaggggtc cgcaaggaat tgcagggcag gggggtagta gcggcggggg atgtatggat 960

cctgagccca tagtgcgtat cgtaggtcga aatggtctat gtgttgatgt tagggatgga 1020

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cagctctgga ctttgaaaag agacaatact attcgatcta atggaaagtg tttaactact 1140

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gttagtcaag gttggcttcc tactaataat acacaacctt ttgttacaac cattgttggg 1380

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cgagataatt gccttacaag tgattctaat atacgggaaa cagttgttaa gatcctctct 1560

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<210> 111

<211> 29

<212> PRT

<213> Ricinus communis

<400> 111

Cys Ala Pro Pro Pro Ser Ser Gln Phe Ser Leu Leu Ile Arg Pro Val
1 5 10 15

Val Pro Asn Phe Asn Ala Asp Val Cys Met Asp Pro Glu
20 25

<210> 112

<211> 27

<212> PRT

<213> Artificial Sequence

<220>

<223> PAP323 (MMP-9) linker

<400> 112

Cys Gly Gly Gly Ser Ser Gly Gly Pro Gln Gly Ile Ala Gly Gln Gly
1 5 10 15

Gly Ser Ser Gly Gly Gly Cys Met Asp Pro Glu
20 25

<210> 113

<211> 45

<212> DNA

<213> Artificial Sequence

<220>

<223> primer 324-3'

<400> 113
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<210> 114

<211> 105

<212> DNA

<213> Ricinus communis

<400> 114
ctcatggtgt atagatgcgc acctccacca tcgtcacagt tttctttgct tataaggcca 60

gtggtaccaa attttaatgc tgatgtttgt atggatcctg agccc 105

<210> 115

<211> 42

<212> DNA

<213> Artificial Sequence

<220>

<223> primer 324-5'

<400> 115
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<210> 116

<211> 57

<212> DNA

<213> Artificial Sequence

<220>

<223> pAP324 (MMP-9) linker

<400> 116
ggaggcggga ctccaggtcc gcaaggaatt gcagggcagg gtagtagcgg cgggggga 57

<210> 117

<211> 1843

<212> DNA

<213> Artificial Sequence

<220>

<223> pAP 324

<400> 117
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aaacaatacc caattataaa ctttaccaca gcgggtgcca ctgtgcaaag ctacacaaac 180

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gtgttgccaa acagagttgg tttgcctata aaccaacggt ttattttagt tgaactctca 300

aatcatgcag agctttctgt tacattagcg ctggatgtca ccaatgcata tgtggtcggc 360

taccgtgctg gaaatagcgc atatttcttt catcctgaca atcaggaaga tgcagaagca 420

atcactcatc ttttcactga tgttcaaaat cgatatacat tcgcctttgg tggtaattat 480

gatagacttg aacaacttgc tggtaatctg agagaaaata tcgagttggg aaatggtcca 540

ctagaggagg ctatctcagc gctttattat tacagtactg gtggcactca gcttccaact 600

ctggctcgtt cctttataat ttgcatccaa atgatttcag aagcagcaag attccaatat 660

attgagggag aaatgcgcac gagaattagg tacaaccgga gatctgcacc agatcctagc 720

gtaattacac ttgagaatag ttgggggaga ctttccactg caattcaaga gtctaaccaa 780

ggagcctttg ctagtccaat tcaactgcaa agacgtaatg gttccaaatt cagtgtgtac 840

gatgtgagta tattaatccc tatcatagct ctcatggtgt atagatgcgg aggcgggact 900

ccaggtccgc aaggaattgc agggcagggt agtagcggcg ggggatgtat ggatcctgag 960

cccatagtgc gtatcgtagg tcgaaatggt ctatgtgttg atgttaggga tggaagattc 1020

cacaacggaa acgcaataca gttgtggcca tgcaagtcta atacagatgc aaatcagctc 1080

tggactttga aaagagacaa tactattcga tctaatggaa agtgtttaac tacttacggg 1140

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cctgcatcct ctggccaacg atggatgttc aagaatgatg gaaccatttt aaatttgtat 1620

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cctctccatg gtgacccaaa ccaaatatgg ttaccattat tttgatagac agattactct 1740

cttgcagtgt gtgtgtcctg ccatgaaaat agatggctta aataaaaagg acattgtaaa 1800

ttttgtaact gaaaggacag caagttatat cgaattcctg cag 1843

<210> 118

<211> 29

<212> PRT

<213> Ricinus communis

<400> 118

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1 5 10 15

Val Pro Asn Phe Asn Ala Asp Val Cys Met Asp Pro Glu
20 25

<210> 119

<211> 25

<212> PRT

<213> Artificial Sequence

<220>

<223> PAP324 (MMP-9) linker

<400> 119

Cys Gly Gly Gly Ser Ser Gly Pro Gln Gly Ile Ala Gly Gln Gly Ser
1 5 10 15

Ser Gly Gly Gly Cys Met Asp Pro Glu
20 25

<210> 120

<211> 42

<212> DNA

<213> Artificial Sequence

<220>

<223> primer 325-3'

<400> 120
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<210> 121

<211> 105

<212> DNA

<213> Ricinus communis

<400> 121
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gtggtaccaa attttaatgc tgatgtttgt atggatcctg agccc 105

<210> 122

<211> 39

<212> DNA

<213> Artificial Sequence

<220>

<223> primer 325-5'

<400> 122
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<210> 123

<211> 51

<212> DNA

<213> Artificial Sequence

<220>

<223> pAP325 (MMP-9) linker

<400> 123
ggaggcggga ctccaccgca aggaattgca gggcagagta gcggcggggg a 51

<210> 124

<211> 1837

<212> DNA

<213> Artificial Sequence

<220>

<223> pAP325

<400> 124
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aaacaatacc caattataaa ctttaccaca gcgggtgcca ctgtgcaaag ctacacaaac 180

tttatcagag ctgttcgcgg tcgtttaaca actggagctg atgtgagaca tgaaatacca 240

gtgttgccaa acagagttgg tttgcctata aaccaacggt ttattttagt tgaactctca 300

aatcatgcag agctttctgt tacattagcg ctggatgtca ccaatgcata tgtggtcggc 360

taccgtgctg gaaatagcgc atatttcttt catcctgaca atcaggaaga tgcagaagca 420

atcactcatc ttttcactga tgttcaaaat cgatatacat tcgcctttgg tggtaattat 480

gatagacttg aacaacttgc tggtaatctg agagaaaata tcgagttggg aaatggtcca 540

ctagaggagg ctatctcagc gctttattat tacagtactg gtggcactca gcttccaact 600

ctggctcgtt cctttataat ttgcatccaa atgatttcag aagcagcaag attccaatat 660

attgagggag aaatgcgcac gagaattagg tacaaccgga gatctgcacc agatcctagc 720

gtaattacac ttgagaatag ttgggggaga ctttccactg caattcaaga gtctaaccaa 780

ggagcctttg ctagtccaat tcaactgcaa agacgtaatg gttccaaatt cagtgtgtac 840

gatgtgagta tattaatccc tatcatagct ctcatggtgt atagatgcgg aggcgggact 900

ccaccgcaag gaattgcagg gcagagtagc ggcgggggat gtatggatcc tgagcccata 960

gtgcgtatcg taggtcgaaa tggtctatgt gttgatgtta gggatggaag attccacaac 1020

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caaatatggg ataatggaac catcataaat cccagatcta gtctagtttt agcagcgaca 1260

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ttggtgttag atgtgaggcg atcggatccg agccttaaac aaatcattct ttaccctctc 1680

catggtgacc caaaccaaat atggttacca ttattttgat agacagatta ctctcttgca 1740

gtgtgtgtgt cctgccatga aaatagatgg cttaaataaa aaggacattg taaattttgt 1800

aactgaaagg acagcaagtt atatcgaatt cctgcag 1837

<210> 125

<211> 29

<212> PRT

<213> Ricinus communis

<400> 125

Cys Ala Pro Pro Pro Ser Ser Gln Phe Ser Leu Leu Ile Arg Pro Val
1 5 10 15

Val Pro Asn Phe Asn Ala Asp Val Cys Met Asp Pro Glu
20 25

<210> 126

<211> 23

<212> PRT

<213> Artificial Sequence

<220>

<223> PAP325 (MMP-9) linker

<400> 126

Cys Gly Gly Gly Ser Ser Pro Gln Gly Ile Ala Gly Gln Ser Ser Gly
1 5 10 15

Gly Gly Cys Met Asp Pro Glu
20

<210> 127

<211> 20

<212> DNA

<213> Artificial Sequence

<220>

<223> synthetic construct

<400> 127
ataacttgct gctcctttca 20

<210> 128

<211> 23

<212> DNA

<213> Artificial Sequence

<220>

<223> synthetic construct

<400> 128
ccgggaggaa atactattgt aat 23

<210> 129

<211> 43

<212> DNA

<213> Artificial Sequence

<220>

<223> synthetic construct

<400> 129
ggaggaatcc ggagatgaaa ccgggaggaa atactattgt aat 43

<210> 130

<211> 33

<212> DNA

<213> Artificial Sequence

<220>

<223> synthetic construct

<400> 130
gtaggcgctg cagataactt gctgtccttt cag 33